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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,406	02/06/2004	Gregor Fischer	080437.52819US	5033

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EXAMINER

LEUNG, RICHARD L

ART UNIT	PAPER NUMBER
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3744

DATE MAILED: 03/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/772,406	Applicant(s) FISCHER ET AL.	
	Examiner Richard L. Leung	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The subject matter of this application admits of illustration by a drawing to facilitate understanding of the invention. Applicant is required to furnish a drawing under 37 CFR 1.81(c). No new matter may be introduced in the required drawing. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d).

Claim Objections

2. Claim 8 is objected to because of the following informalities: the recitation of, "treating the includes" is understood to be --treating the gas includes--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 2-7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, how the act of applying a pressure differential is performed with a rinsing medium is not sufficiently described. In particular, there is no description of how the

Art Unit: 3744

pressure differential is actually generated by the rinsing medium or how the rinsing medium is introduced into the fuel tank system so as to generate the pressure differential. For example, paragraph [0013] of the specification discusses an embodiment wherein exhaust gases from an internal combustion engine may be used as the rinsing medium for the fuel tank supplying the combustion engine. However, there is no description whatsoever of how the exhaust gases are actually supplied from the engine to the fuel tank for use as the rinsing medium, which is deemed a critical step for such a method. Likewise, there is no disclosure of what other sources of rinsing media can be used for the practice of the present invention or how such rinsing media are physically supplied to the fuel tank system.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 5 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The meaning of the term "boundary condition" in the context of the claims is unclear. The term "boundary condition" is not defined by the claims or by the written description, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Therefore claims 5 and 7 are considered indefinite.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 3744

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 8-11, 13, 14, 19, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 0745499 A2 (Garrett et al.).

Regarding claims 1, 8, and 9, Garrett et al. disclose a method for venting an interior space H of a capsule 16 of a vehicle cryo fuel (LNG) tank system, the capsule 16 containing at least one of a line, a valve, and a storage container for a cryo fuel, comprising the acts of generating a pressure differential between the capsule interior space H and a space exterior to the capsule, applying the pressure differential to a gas in the capsule interior space H to cause a gas in the capsule interior space H to be exhausted from the capsule, and treating the gas from the capsule interior space H to reduce its environmental impact. Garrett et al. further disclose that the act of treating the gas includes either burning the gas in an internal combustion engine 12 or includes catalytic oxidation of the gas in catalytic converter 26. See particularly column 3, line 34 to column 4, line 12.

Regarding claims 10, 11, 13, 14, 19, and 20, Garrett et al. disclose a vehicle cryo fuel tank system comprising a cryo tank capsule 16, wherein the capsule 16 envelopes at least one of a line, a valve, and a storage container for cryo fuel (LNG) in a capsule interior space H, wherein the capsule 16 is a pressure differential generator that generates a pressure differential between the capsule interior space H and a space exterior to the capsule that exhausts gas from the capsule interior space H, and a gas treatment device to treat the exhausted gas to reduce its environmental impact. As best

Art Unit: 3744

understood, the pressure differential is generated by stagnation pressure within the capsule as the vehicle moves, and it is further disclosed that the gas treatment device may be a burner, particularly an internal combustion engine 12, or a catalytic oxidizer 26. Again, see particularly column 3, line 34 to column 4, line 12.

9. Claims 1, 8-14, 18, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5540208 (Kikutani).

Regarding claims 1, 8, and 9, Kikutani discloses a liquefied gas fuel supply system and discloses a method for venting an interior space of a capsule 1 of a vehicle cryo fuel tank system, the capsule 1 containing at least one of a line, a valve, and a storage container for a cryo fuel, comprising the acts of generating a pressure differential between the capsule 1 interior space and a space exterior to the capsule (from the evaporation of the liquefied fuel within the capsule 1), applying the pressure differential to the gas in the capsule 1 interior space to cause the gas in the capsule 1 interior to be exhausted from the capsule 1 through a release path 20, and treating the exhausted gas from the capsule 1 interior using a catalytic burner 26 to reduce its environmental impact. See particularly Fig. 1 and column 4, lines 41-52. Since a catalytic burner 26 is used to treat the exhaust gas, it is understood that the process includes burning and catalytic oxidation of the gas. See column 5, lines 39-55.

Regarding claims 10-14, 18, and 20, the vehicle fuel system disclosed by Kikutani comprises a cryo tank capsule 1, wherein the capsule 1 envelopes at least one of a line, a valve, and a storage container for a cryo fuel in a capsule 1 interior space (see Fig. 1), wherein the capsule 1 itself generates a pressure differential through

Art Unit: 3744

evaporation (understood to be from convective forces) between the capsule 1 interior space and the capsule 1 exterior, such that gas in the capsule 1 interior space is driven from the capsule 1 interior space through a line 20 and eventually to a gas treatment device, a catalytic burner 26, to reduce its environmental impact. See again column 4, lines 41-52. The catalytic burner 26 is understood to be at least one of initiated and sustained by catalytic reaction and acts as a catalytic oxidizer. See column 5, lines 39-55. Alternatively, the gas exhausted from capsule 1 may be used as fuel for the vehicle and burned in an internal combustion engine. See particularly column 7, lines 46-67.

10. Claims 10 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by US 4570578 (Peschka et al.). Peschka et al. disclose a vehicle cryo fuel tank system comprising a cryo tank capsule 10 that envelopes at least one of a line, a valve, and a storage container for cryo fuel (hydrogen) in a capsule 10 interior space, a pressure differential generator (auxiliary pump) 30 located outside of the capsule 10, and a gas treatment device (motor) 26 wherein the pressure differential generator generates a pressure differential between the capsule 10 interior space and a space exterior to the capsule to drive a gas in the capsule interior space from the capsule 10 interior space to the gas treatment device 26. See column 4, lines 27-43.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of US 2375834 (Walker). Applicants admit that vehicle cryo fuel tank systems comprising a capsule containing at least one of a line, a valve and a storage container for cryo fuel (e.g. hydrogen) connected to an internal combustion engine are already known in the art (see paragraphs [0003] and [0004]). However, the admitted prior art fails to disclose a method for venting the interior space of the capsule comprising generating a pressure differential between the capsule interior space and a space exterior to the capsule, applying the pressure differential to a gas in the capsule interior space to cause a gas in the capsule interior space to be exhausted from the capsule, and treating the gas from the capsule interior space to reduce its environmental impact, or specifically wherein the act of applying a pressure differential is performed with a rinsing medium, particularly wherein the rinsing medium is an inert gas or an exhaust gas. Walker teaches a method for inerting a vehicle fuel tank system wherein the exhaust gas from a vehicle engine 8, which is inert, is used to purge (rinse) the fuel vapor space of a fuel capsule 2 such that a pressure differential is created in the capsule 2 and the gases are exhausted from the interior space of capsule 2 through a valve 30 (see column 1, line 45 to column 2, line 26). It can be understood that mixing the fuel vapor from the capsule 2 interior space with the exhaust gas from engine 8 reduces the environmental impact of the fuel vapor since it is rendered incombustible. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the teachings of Walker to the system of the admitted prior art such that exhaust gases from the engine are used to purge the

Art Unit: 3744

capsule of fuel vapors because Walker expressly indicates that this method is capable of inerting the combustible fuel vapors in the system and therefore prevents possible explosions.

13. Claims 1-3, 5, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of US 3693915 (Ulanovsky). Applicants admit that vehicle cryo fuel tank systems comprising a capsule containing at least one of a line, a valve and a storage container for cryo fuel (e.g. hydrogen) connected to an internal combustion engine are already known in the art (see paragraphs [0003] and [0004]). However, the admitted prior art fails to disclose a method for venting the interior space of the capsule comprising generating a pressure differential between the capsule interior space and a space exterior to the capsule, applying the pressure differential to a gas in the capsule interior space to cause a gas in the capsule interior space to be exhausted from the capsule, and treating the gas from the capsule interior space to reduce its environmental impact, specifically wherein the act of applying a pressure differential is performed with a rinsing medium, particularly wherein the rinsing medium is an inert gas, or wherein the venting is performed when at least one boundary condition is satisfied such as a predetermined gas concentration within the capsule interior space. Ulanovsky teaches an inerting system for vehicle fuel tanks wherein a fuel capsule 1 having an interior (fuel vapor) space 2 is supplied with an inert gas through conduit 3 when at least one boundary condition is satisfied, such as reaching a predetermined pressure within the fuel capsule 1. The inert gas creates a pressure differential between the capsule interior space and a space exterior space and gases

Art Unit: 3744

from the fuel capsule 1 is exhausted from the capsule 1 through vent valve 7 (see column 2, lines 25-42). It is further taught that the introduction of inert gas into the fuel capsule 1 occurs such that the oxygen concentration within the capsule interior space 2 is always maintained at less than 10 percent (column 3, line 27-28). It can be understood that mixing the fuel vapor from the capsule interior space 2 with the inert gas reduces the environmental impact of the vented fuel vapor since it is rendered incombustible. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the teachings of Ulanovsky to the system of the admitted prior art such that inert gas is supplied to the fuel capsule because Ulanovsky expressly indicates that this method is capable of inerting the combustible fuel vapors in the system, therefore preventing possible explosions, while also maintaining the desired pressure in the capsule in case of atmospheric changes.

14. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5540208 (Kikutani) in view of the admitted prior art. As discussed above, Kikutani discloses all the limitations of the claims, except wherein the pressure differential generator is a component of an internal combustion engine or wherein the burner is the pressure differential generator. Applicants admit that it is already well known that an internal combustion engine generates in its intake cycle a vacuum that can be used for rinsing (see paragraph [0019]). Accordingly, it would have been obvious to one of ordinary skill in the art to have used the internal combustion engine of Kikutani, which is considered a burner, to create the pressure differential because such practice is already well known, as admitted by Applicants, and doing so would prevent

Art Unit: 3744

the pressure in the capsule from exceeding safe levels by constantly withdrawing the fuel vapors.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard L. Leung whose telephone number is 571-272-4811. The examiner can normally be reached on Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise L. Esquivel can be reached on 571-272-4808. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Richard L. Leung
Examiner
Art Unit 3744

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